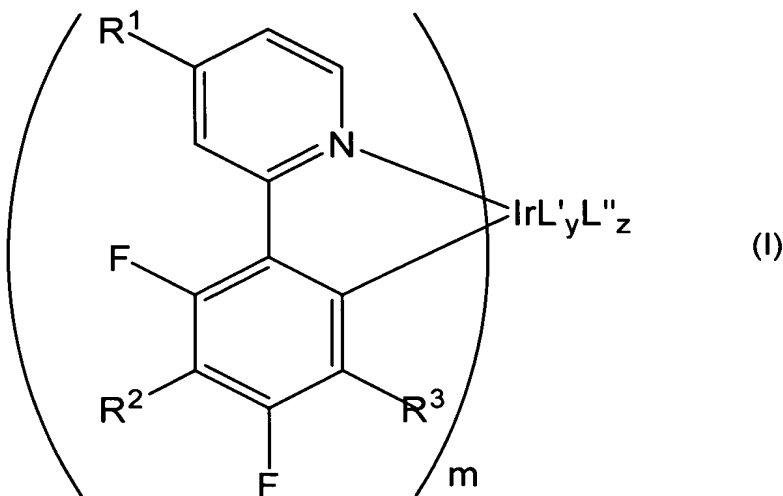


CLAIMS

What is claimed is:

1. An organic electronic device comprising at least one layer comprising a compound having Formula I

5



wherein:

$R^1 = \text{H}, R^4, \text{OR}^4, \text{N}(\text{R}^4)_2$

$R^2 = \text{H}, \text{C}_n\text{F}_{2n+1}, \text{C}_n\text{F}_{2n+1}\text{SO}_2, \text{COOR}^4, \text{CN}$

$R^3 = \text{H}, \text{C}_n\text{F}_{2n+1}, \text{C}_n\text{F}_{2n+1}\text{SO}_2, \text{COOR}^4, \text{CN}$

$R^4$  is the same or different at each occurrence and is H, alkyl, aryl, or adjacent  $R^4$  groups can join together to form a 5- or 6-membered ring,

$L'$  = a bidentate ligand and is not a phenylpyridine, phenylpyrimidine, or phenylquinoline;

$L''$  = a monodentate ligand, and is not a phenylpyridine, and phenylpyrimidine, or phenylquinoline;

$m = 1, 2$  or  $3$ ,

$n$  is an integer from 1 through 20,

$y = 0, 1$  or  $2$ , and

$z = 0$  or an integer from 1 through 4,

with the proviso that the compound is charge neutral and the iridium is hexacoordinate.

2. The device of Claim 1 wherein  $R^2$  and  $R^3$  are independently selected from H,  $CF_3$ ,  $C_2F_5$ ,  $n-C_3F_7$ ,  $i-C_3F_7$ ,  $C_4F_9$ ,  $CF_3SO_2$ ,  $COOR^4$  and CN.

3. The device of Claim 1 wherein  $m = 3$ ,  $y = 0$ , and  $z = 0$ .

5 4. The device of Claim 1 wherein  $m = 2$ ,  $y = 1$ ,  $z = 0$ , and  $L'$  is a monoanionic bidentate ligand.

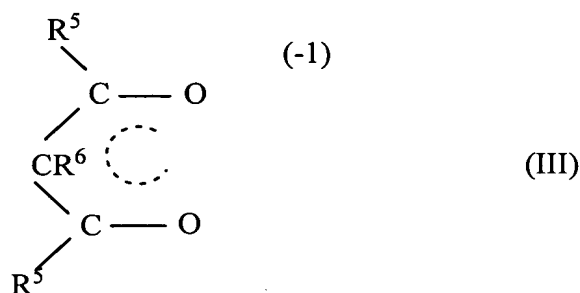
5. The device of Claim 1 wherein  $m = 1$ ,  $y = 1$ , and  $z = 2$ .

6. The device of Claim 5 wherein at least one  $L''$  is a hydride.

7. The device of Claim 4 wherein  $L'$  has a coordinating group  
10 selected from amino, imino, amido, alkoxide, carboxylate, phosphino, and thiolate.

8. The device of Claim 4 wherein  $L'$  is selected from  $\beta$ -enolate ligands, N-analogs of  $\beta$ -enolate ligands, S-analogs of  $\beta$ -enolate ligands, aminocarboxylate ligands, iminocarboxylate ligands, salicylate ligands,  
15 hydroxyquinolate ligands, S-analogs of hydroxyquinolate ligands, phosphinoalkoxide ligands, and a ligand coordinated through a carbon atom that is part of an aromatic group.

9. The device of Claim 8 wherein  $L'$  is a  $\beta$ -enolate having Formula III:



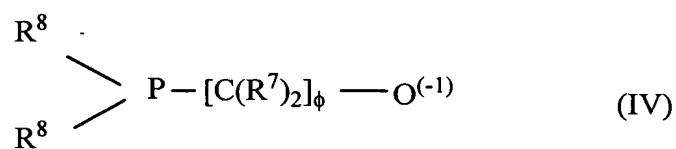
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where

$R^5$  is the same or different at each occurrence and is selected from hydrogen, halogen, substituted or unsubstituted alkyl, aryl, alkylaryl  
25 and heterocyclic groups, or adjacent  $R^5$  groups can be joined to form five- and six-membered rings, which can be substituted, and

$R^6$  is selected from alkyl, aryl, alkylaryl, heterocyclic groups, and fluorine.

10. The device of Claim 8 wherein  $L'$  is a phosphinoalkoxide having  
30 Formula IV:



where

$\text{R}^7$  can be the same or different at each occurrence and is selected from H and  $\text{C}_n(\text{H}+\text{F})_{2n+1}$ ,

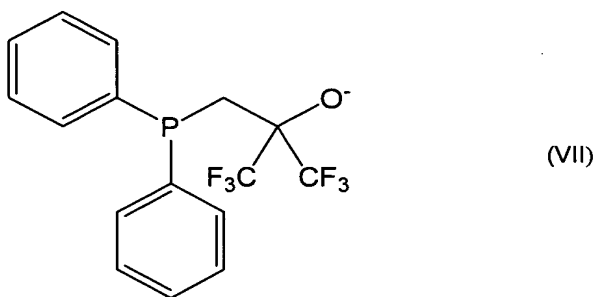
5  $\text{R}^8$  can be the same or different at each occurrence and is selected from  $\text{C}_n(\text{H}+\text{F})_{2n+1}$  and  $\text{C}_6(\text{H}+\text{F})_5$ , or  $\text{C}_6\text{H}_{5-n}(\text{R}^9)_n$ ,

$\text{R}^9 = \text{CF}_3$ ,  $\text{C}_2\text{F}_5$ ,  $n\text{-C}_3\text{F}_7$ ,  $i\text{-C}_3\text{F}_7$ ,  $\text{C}_4\text{F}_9$ ,  $\text{CF}_3\text{SO}_2$ , and

$\phi$  is 2 or 3.

11. The device of Claim 8 wherein L' has Formula VII:

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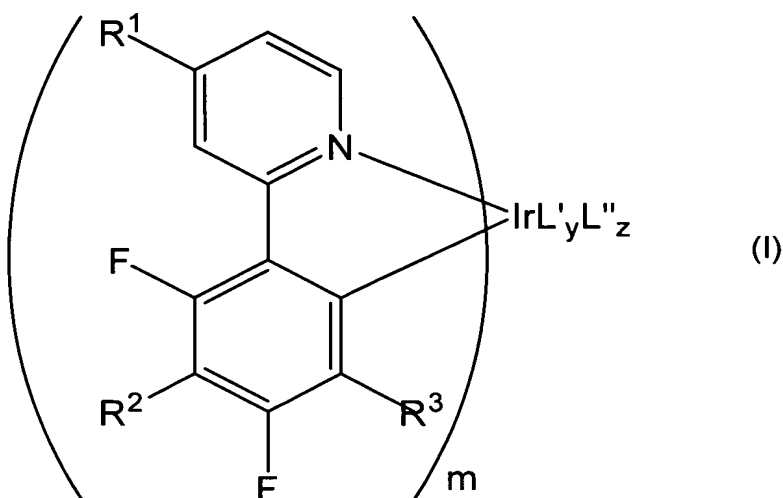
12. The device of Claim 1 wherein the at least one layer is a light-emitting layer.

13. The device of Claim 12 wherein the light-emitting layer further  
15 comprises a diluent.

14. The device of Claim 13 wherein the diluent comprises a polymeric or small molecule material, or a mixture thereof.

15. A compound having Formula I

20



wherein:

$R^1 = H, R^4, OR^4, N(R^4)_2$

5  $R^2 = H, C_nF_{2n+1}, C_nF_{2n+1}SO_2, COOR^4, CN$

$R^3 = H, C_nF_{2n+1}, C_nF_{2n+1}SO_2, COOR^4, CN$

$R^4$  is the same or different at each occurrence and is H, alkyl, aryl, or adjacent  $R^4$  groups can join together to form a 5- or 6-membered ring,

10  $L' =$  a bidentate ligand and is not a phenylpyridine, phenylpyrimidine, or phenylquinoline;

$L'' =$  a monodentate ligand, and is not a phenylpyridine, and phenylpyrimidine, or phenylquinoline;

$m = 1, 2$  or  $3$ ,

15  $n$  is an integer from 1 through 20,

$y = 0, 1$  or  $2$ , and

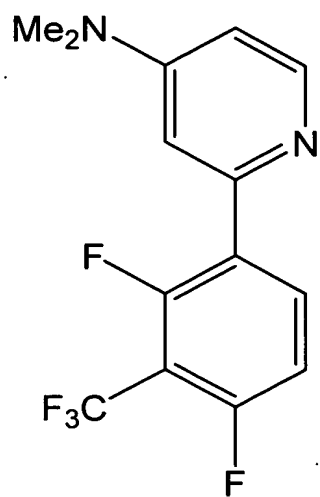
$z = 0$  or an integer from 1 through 4,

with the proviso that the compound is charge neutral and the iridium is hexacoordinate.

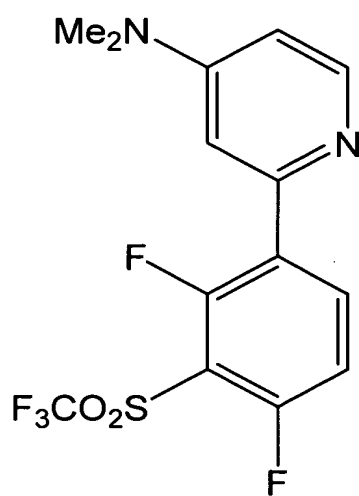
20 16. A compound according to Claim 15, wherein  $R^2$  and  $R^3$  in Formula I are independently selected from H,  $CF_3$ ,  $C_2F_5$ ,  $n-C_3F_7$ ,  $i-C_3F_7$ ,  $C_4F_9$ ,  $CF_3SO_2$ ,  $COOR^4$  and CN.

17. A compound selected from Formula IX, Formula X, Formula XI, and Formula XII:

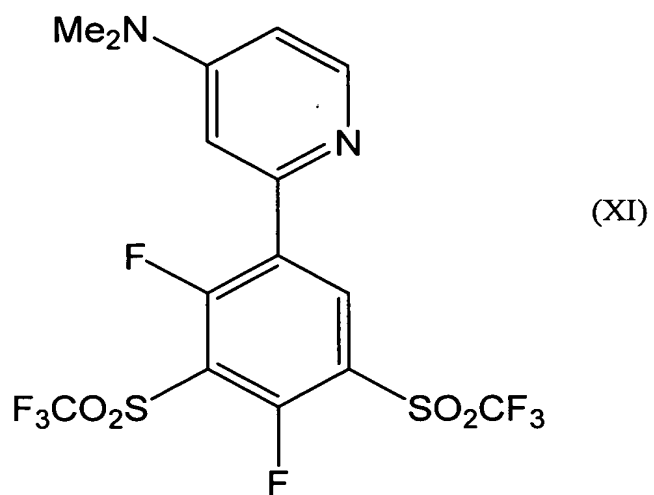
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(IX)

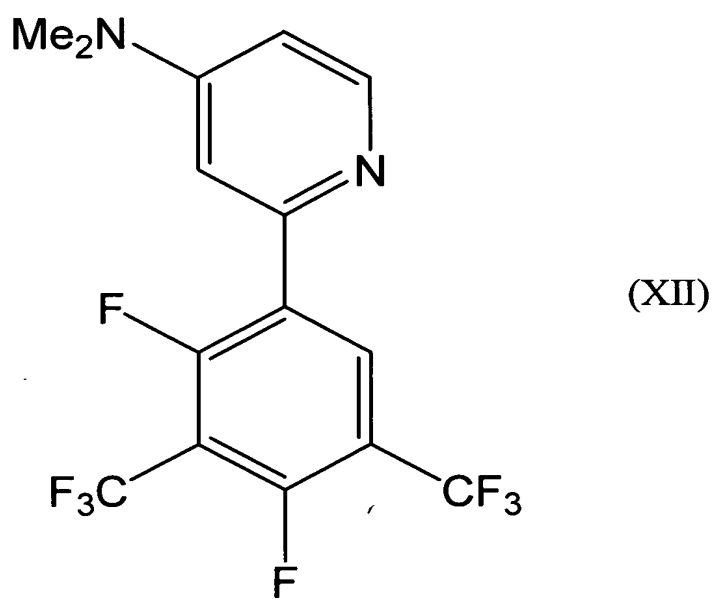


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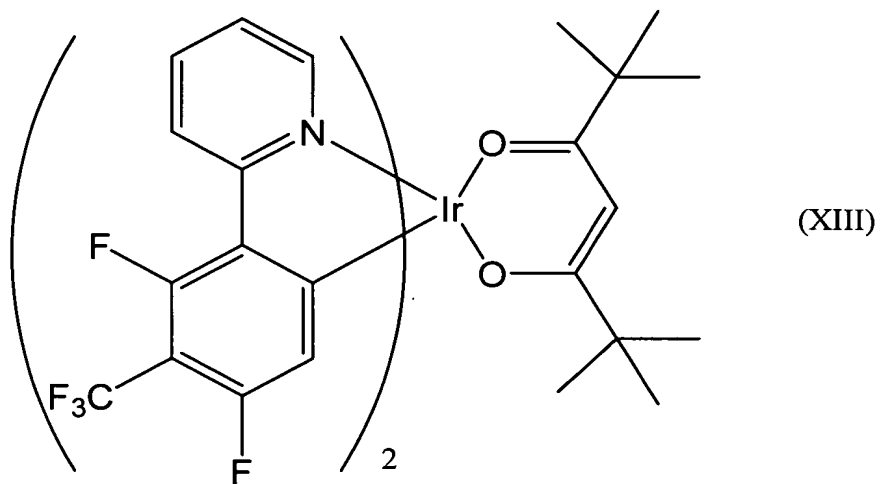
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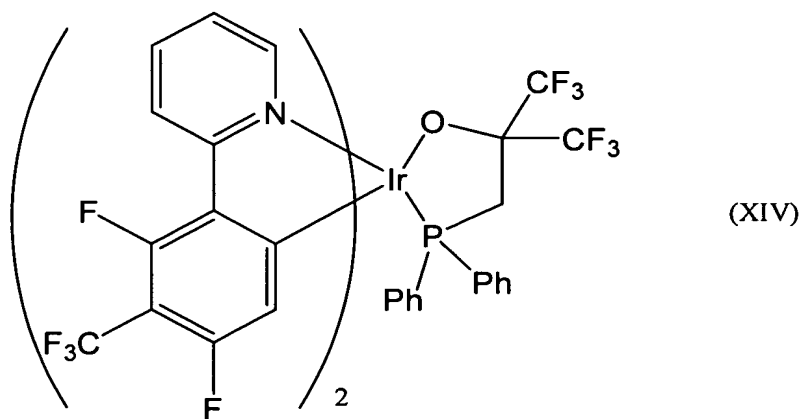


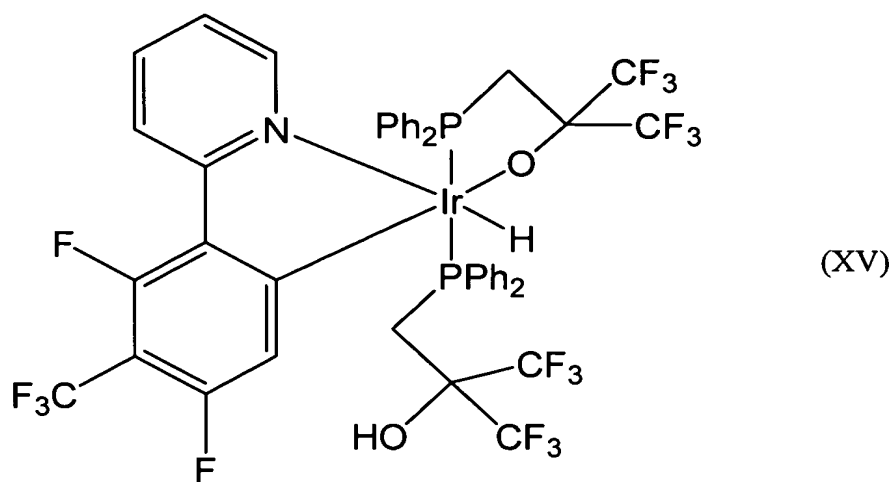
18. A compound having a structure selected from Formula XIII, Formula XIV, and Formula XV below:

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19. A compound having Formula VIII:

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